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CANADIAN SKETCHES.

CANADIAN LOG-HOUSE.

II. The Log-Houses

In our present Canadian sketch, we propose to describe the dwellings which emigrants from the mother country are accustomed to build, upon their first entrance upon woodland life. Such dwellings, humble as they may at first appear, are in reality a type of those which preceded the present abodes in the towns of Canada; for all the inhabitants, except those officially employed, may be deemed to be either emigrants or the descendants of emigrants.

The reader must bear in mind, that the land in Upper Canada, which is given, sold, or let to emigrants, is generally covered with magnificent forest-trees. These have to be cut down, and a *log-house* built of a portion of their trunks. Supposing an emigrant family to have arrived at the destined plot of ground the first operation is to fell the trees. This is done by cutting a notch into each side of the tree, about two feet above the ground; and rather more than half through on the side it is intended the tree should fall. The lower sides of the notches are horizontal, while the upper make angles of about 60°; and a trunk so notched can very readily be felled to the ground.

The writer of a little work under the title of *Six Years in the Bush*, thus records the events of his first "clearing"-day:—

Having laid in a good store of axes and other necessaries for the use of the men, I returned to the settlement (the plot of ground purchased). The sun was shining brightly on the lake as I crossed, and a number of Indian canoes gave it a very pretty and animated appearance. One of the squaws offered me some maple sugar for sale, which I purchased at about four-pence per pound; and had the satisfaction of hearing it pronounced by my men to be of an excellent quality. As I approached the settlement, the heavy fall of the axe gave notice that the work of demolition was going forward; several hemlock and other soft-wooded trees lay stretched along the shore; and I must confess it was with somewhat an English feeling of sorrow for their fate that I stepped out amongst them. A glance at the Falls, however, and the clear blue lake beyond, through the opening, reassured me; and I soon entered into the exultant feelings of the choppers, as one after another the noblest of these ancient lords of the soil groaned under the stroke of the axe, trembled for a few seconds, and fell.

When the trees have been felled, they are stripped of the principal branches, and cut into pieces of twelve or fifteen feet in length. The whole is left in this state until the proper season for *burning* arrives, which is generally in May. At this time, all the branches and small wood are set on fire, and consumed. The large lops are then either piled in heaps and burned, or rolled away to make fences. The surface of the ground, after burning the wood on it, is quite black and charred: and if it be intended for grain, it is now sown without farther preparation or tillage, other than covering the seed with a hoe. The stumps of the trees, that is, those portions which rise about two feet high, still left standing, are not removed, (principally on account of the value of hand-labour among new settlers;) but are left to decay. The roots of the spruce, beech, birch, and maple, will decay sufficiently to take out the stumps in four or five years;

but those of the pine require a much longer time. After the stumps are removed, the plough is used, and the same system of husbandry is pursued as in Great Britain.

In the mean time, the family of the emigrant must be provided with a home, for some months elapse before the ground can be cleared for the erection of dwellings: indeed it is often a year or two before the inmates can proceed to their cleared land. During this interval they reside in rude dwellings called *shanties*, often clustered together in small villages, for mutual comfort. Such a shanty is very little more than a shed built with logs, the chinks between the round edges of the timbers being filled with mud, moss, and bits of wood; the roof is frequently composed of logs, split and hollowed with the axe, and placed side by side, so that the edges rest on each other; the convex and concave surfaces being alternately uppermost, every alternate log forms a channel to carry off the rain and melting snow. The eaves of such a building resemble the scollopped edges of a clamp shell; but rude as this covering is, it effectually answers the purpose of keeping the interior dry; far more so than the roofs formed of bark or boards, through which the rain will find entrance. Sometimes the shanty has a window, sometimes only an open doorway, which at the same time admits the light, and lets out the smoke. A rude chimney, which is often nothing better than an opening cut in one of the top logs above the hearth, serves as a vent for the smoke; the only precaution against the fire catching the log-walls behind the hearth, being a very few large stones placed in a half-circular form, or more commonly a bank of dry earth raised against the wall.

It must be understood that such a primitive hut as we have described, is occupied only by the very poorest classes of emigrants, such as have inhabited dwellings of the humblest kind in their own country. Those who are at all removed from absolute poverty, have the means of collecting around them, even in their temporary abodes, many comforts and conveniences. Besides this, there is, generally speaking, a friendly and social feeling, a willingness to render mutual assistance, among the new settlers, which is exceedingly important, and conduces much to the comfort of all.

Supposing the settler's grant of land to be cleared, he proceeds to erect his habitation or *log-house*, as it is called, which is midway between a shanty and an English cottage. Round lops or trunks of trees, about fifteen feet long, and without much dressing or preparation, are laid horizontally over each other, and notched at the corners, so as to fit them down sufficiently close. One is first laid to begin the walls on each side; then one at each end, all crossing each other at the corners; and so on until the walls are raised to a height of six or seven feet. The seams are closed up with moss or clay; three or four rafters are then laid for the roof, which is covered with the rinds of birch or fir-trees, and thatched either with spruce branches or long marine grass that is found washed up along the shores of the great lakes. Poles are laid over this thatch, together with birch withes, to keep the whole secure. The chimney is formed of a wooden frame-work, placed on a slight foundation of stone, roughly raised a few feet above the ground. This framework goes out through the roof, and its sides are closed with clay, and a small quantity of straw, kneaded together. A space large enough for a door, and another for a window, are cut through the walls. Under the centre of the cottage a square pit or cellar is dug, for the purpose of preserving potatoes, and other vegetables during the winter. ("Potatoes," says Mr. Bouchette, "are to settlers with limited means, from their easy culture and quick production, the very first object of attention as an article of food.") Over the potato-pit a floor of boards or logs, hewn flat on the upper side, is laid, and another over head, to form a sort of garret. When the door is hung, a window sash, with six, nine, or twelve panes of glass, is fixed; and the house, by internal partitions, is divided as may be necessary into separate rooms. If the means of the settler admit of it, he covers the roof with shingle boards instead of bark or thatch,—lines the wall, floor, &c., with planks, instead of leaving the rough logs visible,—and covers the walls, and perhaps the floor, with matting or baize; in short, there are the means of purchasing, from stores and dealers in the towns, many articles conducive to the comfort of the settlers; but the general nature and construction of a log-house are nearly such as we have described.

When an emigrant (or a *settler* as we may more properly term him, when he has arrived at the colony,) is about to erect a log-house, he "calls a *bee*," to use a familiar American term; that is, he calls upon his neighbours to come and lend a hand in building his house. This call is always responded to readily and cheerfully; for most of those who render the service required, have had similar services performed for them at a former time. There are "logging-bees," "chopping-bees," and "raising or building bees," each being devoted to a different purpose, and each implying an assembly of neighbours meeting to work jointly and simultaneously for a new-comer, in order that he may have a house to live in as soon as possible. No pay or reward is given or expected on such an occasion, the obliged party merely providing provisions for the short time that the "bee" lasts. This custom arose from necessity; and although it may be inconvenient to attend at a particular moment to such a call, the recollection of similar services received, seldom allows a person to refuse. It is, in fact, considered as a debt of honour, which a settler feels himself bound to attend to. Nor does this operate merely on settlers belonging to one class or rank in life; poor and rich, the farmer-settler and the labourer, unite for this purpose; if personal labour be not rendered, the aid of a servant, or of a yoke of cattle, is substituted.

To illustrate these remarks, we will quote a passage from an interesting volume called *The Backwoods of Canada*. The writer and her family, who were emigrants, resided in the house of a friend during the "clearing" of their plot of land. When all was ready for building a house, a "bee" was called:—

Sixteen of our neighbours cheerfully obeyed our summons; and though the day was far from favourable, so faithfully did our *hive* perform their tasks, that by night the outer walls were raised. The work went merrily on, with the aid of plenty of Canadian nectar (whiskey), the honey that our bees are solaced with. Some huge joints of salt pork, a peck of potatoes, with a rice pudding, and a loaf as big as an enormous Cheshire-cheese, formed the feast that was to regale them during the raising. This was spread out in the shanty, in a very rural style. In short, we laughed, and called it a "pic-nic in the back-woods;" and rude as was the fare, I can assure you great was the satisfaction expressed by all the guests of every degree, our "bee" being considered as very well conducted. In spite of the difference of rank among those that assisted at the "bee," the greatest possible harmony prevailed, and the party separated well pleased with the day's work and entertainment. The following day I went to survey the newly-raised edifice, but was sorely puzzled, as it presented very little appearance of a house. It was merely an oblong square of logs, raised one above another, with open spaces between every row of logs. The spaces for the doors and windows were not then chopped out, and the rafters were not up. In short, it looked a very queer sort of a place, and I returned home a little disappointed, and wondering that my husband should be so well-pleased with the progress that had been made. A day or two afterwards I again visited it. The sleepers were laid to support the floors, and the places for the windows and doors cut out of the solid timbers, so that it had not quite so much the look of a bird-cage as before.

To this succeeded the operations for constructing a tolerable log-house, such as covering the roof with shingles, sawing-out and laying down flooring boards, plastering the walls inside and out with a mixture of lime and clay,

glazing the windows, &c. We may remark, that the settlers generally glaze their own windows. Boxes of glass, containing panes of various sizes, can be bought in the towns of Canada; and a little ingenuity will soon teach the mode of fixing the glass in the windows.

It has been observed, by one of the emigrants who have recorded their proceedings, that the erection of a *saw-mill* is generally the first marked event, in the growth of a village from several separate settlements. At first, some one or two adventurers, possessed of a little capital, purchase a few acres of land on the banks of a river or stream, where there is good water-power. Two or three rude huts or shanties are erected, and a small clearing made in the forest; and by degrees others are attracted to the spot. The original settler, meanwhile, has probably gained a little additional property by trading, and embarks it in a saw-mill, which induces many to come into the neighbourhood, to avail themselves of the facility which it affords for building. Then, as the settlement increases, some bold individual is induced to erect a grist or flour-mill, which again serves as an attraction; a growing population requires the necessaries of life at hand; "stores" are opened; taverns are licensed, and in a few years a thriving village or an important town springs up in the heart of the forest.

To show that it is not merely the labouring classes who make tnemselves satisfied with the simple log-houses of the emigrants, we may state that the writer of the book quoted above was the wife of an English officer, who with his family had emigrated to Canada; a circumstance by no means unusual, since the conclusion of the continental war has left many military men comparatively unemployed. In many of these instances a considerable plot of land in Canada was either given to them by Government or sold at a trifling price. It must, doubtless, afford regret to an educated man thus to sever himself from home and its associations; but if he be industrious and intelligent, whatever be his rank in life, he will rarely fail to obtain the means wherewith to live comfortably, in Canada. And with respect to mental culture, the following remarks, from an emigrant who had received a classical education in England, are valuable:—

I once thought, when the resolution to emigrate was first formed, how useless had been the large expenditure on my education, since I was to forego its advantages, and pass my life among those who would neither know nor appreciate its worth. But I have found it far otherwise, and would say to all of my own station in life whose circumstances, or a "truant disposition good," may hereafter lead into the Bush—think no sort of knowledge unprofitable, or unsuited to your kind of life; but store your mind with sound, wholesome literature, and you will find within you a fountain as grateful as the well-spring to the parched traveller in the desert.

RELENTLESS Time, that steals with silent tread,
Shall tear away the trophies of the dead;
Fame, on the pyramid's aspiring top,
With sighs shall her recording trumpet drop;
The feeble characters of Glory's hand
Shall perish, like the tracks upon the sand;
But not with these expire the sacred flame
Of Virtue, or the good man's awful name.—BOWLES.

ALL the virtues of domestic life are lessons which are taught in the Christian school. It is like the Sun, who, though he regulates and leads on the year, dispensing life and light to all the planetary worlds, yet disdains not to cherish and beautify the flower which opens its bosom to his beam: so the Christian religion, though chiefly intended to teach us the knowledge of salvation, and be our guide to happiness on high, yet also regulates our conversation in the world, extends its benign influence to every circle of society, and peculiarly diffuseth its blessed fruits in the paths of domestic life.—HOGG.

EASY LESSONS ON REASONING.

LESSON X.

§ 1. A PROPOSITION is, as has been said, an act of judgment expressed in words; and is defined to be a "Sentence which *asserts*;" or, in the language of some writers, an "indicative Sentence:" "*indicative*," [or "asserting"] meaning "that which *affirms or denies* something." It is this that distinguishes a *Proposition* from a *Question*, or a *Command* &c.

Propositions considered merely as *Sentences*, are distinguished into "Categorical" and "Hypothetical."

The Categorical asserts simply that the Predicate does, or does not, apply to the Subject: as "the world had an intelligent maker:" "Man is not capable of raising himself, unassisted, from the savage to the civilized state." The Hypothetical [called by some writers, "Compound"] makes its assertion under a *Condition*, or with an *Alternative;* as "If the World is not the work of chance, it must have had an intelligent maker:" "Either mankind are capable of rising into civilization unassisted, or the first beginning of civilization must have come from above."

The former of these two last examples is of that kind called "Conditional-propositions;" [or "hypothetical," according to those writers who use the word "compound" where we have used "hypothetical"] the "*condition*" being denoted by "if," or some such word. The latter example is of the kind called "Disjunctive;" the *alternative* being denoted by "either" and "or."

The division of Propositions into Categorical and Hypothetical, is, as has been said, a division of them considered merely as *Sentences:* for it extends to other kinds of Sentences also. Thus, "Are men capable of raising themselves to civilization?" "Go and study books of travels," are *categorical sentences*, tho' not *propositions*. "If man is incapable of civilizing himself, whence came the first beginning of civilization?" is a *conditional question;* and "Either admit the conclusion, or refute the argument," is a *disjunctive command*.

At present we shall treat only of Categorical Propositions.

§ 2. It has been above explained that Propositions (of this class,—the Categorical) are divided according to their "Quantity" into "Universal" and "Particular:"—that an "*Indefinite*-proposition" is in reality either the one or the other; tho' the form of expression does not declare *which* is meant:—and also that a "*Singular*-proposition" is equivalent to a "Universal," since its Subject cannot but stand for the whole of what that Term denotes, when that whole is one single Individual.

You have also learnt that Propositions are divided, according to their "Quality," into "affirmative" and "negative." The division of them, again, into "true" and "false" is also called a division according to their 'quality;" namely, the "quality of the *Matter:*" (as it has relation to the subject-matter one is treating of) while the other kind of quality (a proposition's being *affirmative* or *negative*) is "the quality of the *expression*."

The "quality of the matter" is considered (in relation to our present inquiries) as *accidental*, and the "quality of the expression" as *essential*. For tho' the truth or falsity of a proposition—for instance, in Natural-history is the most essential point, *in reference to Natural-history*, and of a *mathematical* proposition, in reference to *Mathematics*, and so in other cases,—this is merely accidental in reference to an inquiry (such as the present) only as to *forms of expression*. In reference to *that*, the essential difference is that between affirmation and negation.

And here it should be remarked by the way, that as, on the one hand, every *Proposition* must be either true or false, so, on the other hand, *nothing else* can be, strictly speaking, either true or false. In colloquial language however, "true," and "false" are often more loosely applied; as when men speak of the "*true* cause" of any-

thing; meaning, "the *real* cause;"—a "*false* prophet,"—that is, a *pretended* prophet, or one who *utters falsehoods;*—a "true" or "false" argument; meaning a *valid,* [real] or an *apparent*-argument;—a man "true," or "false" to his friend; *i.e., faithful* or unfaithful &c.

A Proposition, you are to observe, is Affirmative or Negative according to its *Copula; i.e.* according as the Predicate is affirmed or denied of the Subject. Thus "Not to advance, is to fall back," is *affirmative:* "No miser is truly rich" [or "a miser is not truly rich"] is a *negative.* "*A few* of the sailors were saved," is an affirmative; "*Few* of the sailors were saved," is properly a negative; for it would be understood that you were speaking of "most of the sailors," and *denying* that they were saved.

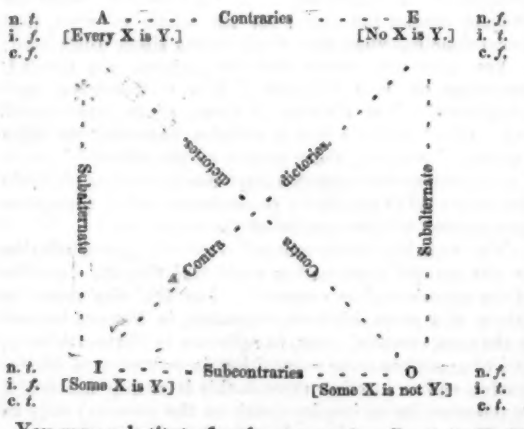
Since then every Proposition must be either Affirmative or Negative, and also, either Universal or Particular, Propositions are considered as divided (taking into account both Quantity *and* Quality) into four Classes; which, for brevity's sake, are usually denoted by the Symbols A, E, I, O; namely A. Universal affirmative, E. Universal-negative, I. Particular-affirmative, and O. Particular-negative.

§ 3. Any two Propositions are, technically, said to be "*opposed*" to each other, when "having the same Subject and Predicate, they differ either in Quantity, or in Quality, or in both."

In ordinary language however (and in some technical treatises) propositions are not reckoned as "opposed" unless they differ in *Quality.*

It is evident that with any given Subject and Predicate, you may state four distinct Propositions, A, E, I and O: any two of which are said to be "opposed." And hence there are (in the language of most technical writers) reckoned four kinds of "Opposition." 1st, A and E,—the two Universals, Affirmative and Negative, (always supposing the *Terms* the same) are called "*Contraries*" to each other: 2nd, The two Particulars, I and O, "*Subcontraries.*" 3rd, The two Affirmatives again, or the two Negatives, (A and I, or again, E and O) are called "*Subalterns;*" and 4th, those which differ both in Quantity and Quality—as A and O, or E and I,—are called "*Contradictories.*"

It is usual to exhibit in a Scheme (such as that below) these four kinds of "Opposition;" by placing at the corners of a Square the Symbols A, E, I, O, as representing, respectively, the abovementioned four classes of Propositions.



You may substitute for the unmeaning Symbols X, Y (which stand for the Terms of the above Propositions) whatever significant Terms you will; and on their meaning, of course, will depend, the truth or falsity of each Proposition.

For instance, Naturalists have observed that "animals having horns on the head are universally ruminant;" that, of "carnivorous animals" none are ruminant; and that, of "animals with hoofs," some are ruminant, and some, not. Let us take then instead of "X," "animals with horns on the head," and for "Y," "ruminant:" here, the real connexion of the Terms in respect of their meaning—which Connexion is called the "*matter*" of a proposition—is such that the Predicate may be affirmed universally of the Subject; and of course the *affirmatives* (whether Universal or Particular) will be true, and the "negatives," false. In this case the "matter" is technically called "necessary;" inasmuch as we *cannot avoid believing* the Predicate to be applicable to the Subject.

Again, let "X" represent "carnivorous animal," and "Y" "ruminant:" this is a case of what is called "impossible matter;" (*i.e.,* where we *cannot possibly conceive* the Predicate to be applicable to the Subject) being just the reverse of the foregoing: and, of course, both the Affirmatives will here be false, and both Negatives true.

And lastly, as an instance of what is called "contingent matter,"—*i.e.,* where the Predicate can neither be affirmed universally, nor denied universally, of the Subject, take "hoofed animal" for "X" and "ruminant" for "Y;" and of course the Universals will both be false, and the Particulars, true: that is, it is equally true that "some hoofed animals are ruminant," and that "some are not."

§ 4. You will perceive then, on examining such a Scheme, that "*Contrary*" Propositions can never be both of them true, tho' they may (viz: in "contingent-matter") be both false: that "*Sub*contraries, on the other hand, may be both true, but never both false: that "*Contradictories*" [*diametrically*-opposite Propositions] must in every case be, one true, and the other false: and that "*Subalterns*" (of which the Universal is called the "Subalter*nant,*" and the Particular, the "Subalter*nate*") may be either both true, or both false, or the one true and the other false.

These last Propositions however, tho' reckoned, as has been said above, by most dialectical writers, among those *opposed,* are not so accounted in ordinary discourse.

The four kinds of Propositions, A, E, I, O, have been, in the Scheme, marked, each, with the letters *t* for "true" and *f* for "false," and also with the letters *n, i, c,* to denote the three kinds of matter, (necessary, impossible, contingent,) in order to point ont *which* propositions are true, and which, false, in each kind of matter.

The technical-terms we have here explained, are needful to be learnt, as being, some of them, in frequent use, and as being convenient for the avoiding of circumlocution and of indistinctness.

"Contradictory-opposition" is the kind most frequently alluded to, because (as is evident from what has been just said) to *deny,*—or to *disbelieve,*—a proposition, is to *assert,* or to *believe,* its Contradictory; and of course, to *assent* to, or *maintain* a proposition, is to reject its Contradictory. Belief therefore, and Disbelief, are not *two different* states of the mind, but the *same,* only considered in reference to two Contradictory propositions. And consequently, *Credulity* and *Incredulity* are not opposite habits, but the same, in reference to some class of propositions, and to their contradictories.

For instance, he who is the most *incredulous* respecting a certain person's *guilt,* is, in other words, the most ready to believe him *not guilty;* he who is the most credulous* as to certain works, being within the reach of Magic, is the most incredulous [or "slow of heart to believe"] that they are *not* within the reach of Magic; and so, in all cases.

The reverse of *believing this or that individual* proposition, is, no doubt, to *disbelieve that same* proposition: but the reverse of *belief, generally,* is (not disbelief; since that implies belief; but) *doubt.*

And there may even be cases in which *doubt* itself may amount to the most extravagant credulity. For instance if any one should "doubt whether there is any

* As the Jews, in the time of Jesus, in respect of his works.

such Country as Egypt," he would be in fact *believing* this most incredible proposition; that "it is *possible* for many thousands of persons, unconnected with each other, to have agreed, for successive Ages, in bearing witness to the existence of a fictitious Country, without being detected, contradicted, or suspected."

All this, tho' self-evident, is, in practice, frequently lost sight of.

§ 5. A Proposition is said to be "*converted*," when its "Terms are transposed;" *i. e.*, when the Subject is made the Predicate, and the Predicate the Subject. And when no other change is made, this is called "simple-conversion." When for instance I say "no carnivorous animal is a ruminant," the "simple-*converse*" of this would be, "no ruminant is a carnivorous animal."

The "conversion" of such a proposition as this, "No one [is happy who] is anxious for change," would be effected by altering the arrangement of the words in brackets, into "who is happy."

The Conversion of a Proposition is said to be "*illative*," when the truth of the "*Converse*" is "implied" (looking merely to the *form of expression*) "by the truth of the original proposition;" [or "*expositа*"] which is the case in the example above: it being evident that if the former of those Propositions (whatever may be the meaning of the Terms) be true, the Converse must be true also. For to say that "No X is Y," is to imply that "no Y is X."

You are to observe however that the Converse of a true Proposition may happen to be true also, without the Conversion's being "illative;" that is, when the truth of that Converse is not implied by the truth of the "Exposita" [the original proposition]. Thus, "Every X is Y" does not imply that "every Y is X," tho' it may happen that both propositions may be true.

For instance, that "Every tree is a vegetable," does not imply that "Every vegetable is a tree;" and this last happens in fact to be not true. But no more is it implied, when I say "every equilateral triangle is equiangular," that "every equiangular triangle is equilateral;" for tho' both these propositions *are* true, the one of them does not imply the other; and they are separately demonstrated as distinct propositions, in geometrical treatises.

In order to understand why the simple-conversion of "every X is Y," into "every Y is X," is not "illative," you have only to observe that, in the "Exposita," [original proposition] "Y" is *undistributed*, as being the predicate of an Affirmative; while, in the "Converse," it is "distributed," by being made the *Subject of a Universal*. A *new Term* is therefore, in fact, introduced; since instead of *part* of the Term "Y" we have employed the *whole* of it; and the agreement or disagreement of one Term with *some part* of another Term, does not imply its agreement or disagreement with *every part* of it; that is, with the *whole*. For tho' a part is implied by a whole, a whole is not implied by a part.

When, for instance, I say "every tree is a vegetable" I am employing (as was formerly explained) the Term "vegetable" to stand only for *part* of its "significates;" and this does not authorize me to employ it (in the Converse) as standing for *all* its Significates; as in saying that "*every* vegetable is a tree."

And strictly speaking, *that* is not a *real* "conversion," —but only an "*apparent* conversion"—which is not "illative." For, (as has been above said) there is not a *mere transposition* of the terms, but a *new term* introduced, when a term which was undistributed in the "exposita," is distributed [taken universally] in the Converse.

But as it is usual, in common discourse, to speak of "an *unsound* argument,"—meaning, "an *apparent*-argument, which is in reality *not* an argument," so, in this case also, it is common to say, for instance, that "Euclid proves first that all equilateral triangles are equiangular, and afterwards he proves the *Converse*, that all equiangular triangles are equilateral:" or again, to say, "It is true that all money is wealth; but I deny the *Converse*, (in reality, the *apparent*-converse) that all wealth is money."

§ 6. Conversion then, strictly so called,—that is, "illative-conversion,"—can only take place when no term is distributed in the Converse, which was undistributed in the "Exposita."

Hence, since E [a Universal-negative] distributes both terms, and I, [a Particular-affirmative] neither, these may both be simply-converted illatively. As in the example above, "no carnivorous animal is ruminant" implies by the very form of the expression, that "no ruminant is a carnivorous animal." And so also "some things which are strange are believed," implies that "some things which are believed are strange."

We may also illatively-convert A [a Universal-affirmative] by altering its "*Quantity*" from Universal to Particular. For "Every X is Y" does imply that "*some* Y" (tho' not that "*every* Y") is X." So in the example above we might allowably have stated (tho' not that "all vegetables," yet) that "some vegetables are trees."

This procedure is called "conversion by *limitation*;" or according to some writers, "conversion per accidens." And it may be applied to E also; as for instance in the example above, you might have said "*Some* ruminant is not carnivorous;" tho' this would have been to come short of what you were warranted in stating.

But in O [particular-negative]the conversion will not be illative, on account of the rule that the Predicate of a Negative is always distributed. The proposition therefore "Some X is not Y" does not imply that "some Y is not X;" since X is distributed in the "Converse" and was not, in the "Exposita," in which it was the Subject of a Particular. It is true that "some men are not negroes;" but this does not imply that "some negroes are not men."

A Particular negative [O] cannot be converted illatively except by changing its *Quality* from negative to affirmative, (without altering the sense) by regarding the negation as attached to the PREDICATE instead of to the *Copula*. Thus, "Some X——is not——Y" may be taken as an affirmative, namely, "Some X——is——not Y;" and this latter proposition [I] may of course be simply-converted illatively; as "Some not Y——is——X.

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Thus, "Some men are not-negroes" implies that "Some who are not negroes are men;" or (as such a proposition is often expressed) "One may be a man *without* being a negro." So again "Some who possess wealth are not happy," implies that "Some who are not-happy possess wealth."

§ 7. This procedure is technically called "Conversion-by-*negation*," [or, by Contraposition"]. It is applicable also to [A] Universal-affirmatives. For, to *affirm* some Predicable of a Subject, or [to assert the *presence* of some attribute] is the same thing in sense as to *deny* its *absence*: hence a Universal-affirmative may be stated as a Universal-*negative;* which (as we have seen) may be simply-converted.

Thus Every "X is Y," is *equipollent* [or *equivalent in sense*] to "No X is not Y;" which may be illatively converted into "nothing that is not—Y is X:" [or "whatever is not Y——is not—X"].

So the proposition, "Every true poet is a man of genius," may be stated as "No true poet-is—not-a-man-of-genius;" which (being E) may be illatively converted, into "no one who is not a man of genius is a true poet;" or (as such a proposition is very commonly expressed) "*None but* a man of genius can be a true

poet;" or again, "a man of genius *alone* can be a true poet;" or again "One cannot be a true poet *without* being a man of genius."

And here it is worth remarking by the way, that in such examples as the above, the words "may," "can," "cannot," &c. have no reference (as they sometimes have) to *power*, as exercised by an agent; but merely to the *distribution* or *non-distribution of Terms:* or to the *confidence* or *doubtfulness* we feel respecting some supposition.

To say, for instance that "a man who has the plague *may* recover," does not mean that "it is in his *power* to recover if he chuses;" but is only a form of stating a *particular-proposition*: [I] namely, that "*Some* who have the plague recover." And again to say, "there *may* be a bed of coal in this district," means merely, "The existence of a bed of coal in this district—is—a thing which I cannot confidently deny or affirm."

§ 8. So also to say "a virtuous man *cannot* betray his Country" [or "it is *impossible* that a virtuous man should betray &c."] does not mean that he lacks the *power*, (for there is no *virtue* in not doing what is out of one's power) but merely that "not betraying one's country" forms an *essential part of the notion* conveyed by the *term* "virtuous." We mean in short that it is as much out of *our* power to *conceive* a virtuous man who should be a traitor, as to conceive "a Square with *unequal sides;* that is, a square which is *not* a square. The expression therefore is merely a way of stating the Universal-proposition [E] "No virtuous man betrays his Country."

So again, to say "a weary traveller in the deserts of Arabia *must* eagerly drink when he comes to a Spring," does not mean that *he* is *compelled* to drink, but that *I* cannot *avoid believing* that he will;—that there is no *doubt* in my mind.

In these and many other such instances, the words "may," must," "can," "impossible" &c. have reference, not to *power* or *absence of power in an agent*, but only to *universality* or absence of Universality in the *expression;* or, to *doubt or absence of doubt* in our own mind, respecting what is asserted.

IT is not by rigorous discipline, and unrelaxing austerity, that the aged can maintain an ascendant over youthful minds. The constraint which their presence will impose, and the aversion which their manners will create, if the one be constantly awful, and the other severe, tend to frustrate the effect of all their wisdom. They must assume the spirit of the companion and the friend; and mix with the authority of age a proper degree of indulgence to the manners of the young. Instead of lessening the respect due to their years by such condescension, they take the surest method to increase it. Old age never appears with greater dignity than, when tempered with mildness, and enlivened with good humour, it acts as the guide and the patron of youth. Religion displayed in such a character, strikes the beholders, as at once amiable and venerable. They revere its power, when they see it adding so much grace to the decays of nature, and shedding so pleasing a lustre over the evening of life. The young wish to tread in the same steps, and to arrive at the close of their days with equal honour. They listen with attention to counsels which are mingled with tenderness, and rendered respectable by gray hairs. For, notwithstanding all its presumption, youth naturally bends before superior knowledge and years. Aged wisdom, when joined with acknowledged virtue, exerts an authority over the human mind, greater even than that which arises from power and station. It can check the most forward, abash the most profligate, and strike with awe the most giddy and unthinking.—BLAIR.

FRUITLESS is sorrow for having done amiss, if it issue not in a resolution to do so no more. And in forming this resolution, no time is to be lost. He who doth not resolve to-day, will be much less disposed to resolve to-morrow. Procrastination in many cases is dangerous: in this, it is often fatal.—BISHOP HORNY.

WHAT IS THE COLOUR OF THE SEA?

MANY of the proper names of places in various parts of the world seem to have been originally derived from certain striking physical peculiarities which suggested to the natives, or to the discoverers of the places, the names which they now bear. The quality most likely to attract attention, especially with reference to large collections of water is *colour*, and accordingly we have seas to which White and Black, Red, Vermilion, and Yellow, have been respectively applied.

Rivers also are said to present their characteristic colours; and not only the water, but also the ice of different streams, has its peculiar hue. The ice of the Rhine is always bluish; while on the other hand, the ice of the Moselle is always greenish. The ice of the small rivers that pour into the Lower Rhine is either white or pale greenish. This difference of colour is so striking that the boatmen guide themselves by it, and they know whether it is Rhine or Moselle ice that they have to do with.

Colonel Jackson, in his Memoir on the Congelation of the Neva, says,

Every traveller who has seen ice in large masses, speaks with rapture of its colours. To some it is of a roseate hue, to others emerald green; some describe it as being blue; others as sea green. I have examined the blocks on the Neva, in all directions, under all aspects of the sky, and at different times of the day, and have found the colour to be invariably the same when the ice is pure. It is then of a pale blue, inclining to aqua-marine green; if there be snow on one side, the blue is less visible, and the colour is sensibly greener. Examined closely, the blocks present innumerable cracks near the surface, which, like similar accidents in rock-crystal, refract the light into all the colours of the prism; the most predominant, however, is a rich and exquisitely beautiful sapphire blue, which, being softened by the distance, is probably the cause of the pale blue tint of the whole.

It becomes, therefore, interesting to inquire into the circumstances which impart so large a variety of tints to sea and river water, which we are so accustomed to refer to as blue. Confining our remarks chiefly to the colour of sea water, (since the explanation applies equally to both) and availing ourselves of the valuable memoir of M. Arago on the subject, we proceed to invite the reader's attention to the solution of the inquiry, "What is the colour of the sea?"

To this question, the responses, indeed, might be very nearly identical. Mr. Scoresby compares the general tint of the Polar Seas to an *ultramarine blue;* M. Costaz assimilates the colour of the waters of the Mediterranean to a perfectly transparent solution of the most beautiful *indigo*, or to *celestial blue;* Captain Tuckey characterises the waves of the Atlantic in equinoctial regions, by the words *bright azure;* and Sir Humphrey Davy names as *bright blue* the hue reflected by pure water, produced by the melting of snows and ice. It appears then that the *peculiar* tint of the ocean is always *celestial blue* more or less deep, that is to say, mixed with smaller or larger quantities of white light.

But the waters of the sea are often mingled with a variety of substances, which impart their peculiar hue or modify that of the water. Thus, for example, the green bands, so widely extended and so peculiarly striking in the Polar regions, contain myriads of medusæ of a yellowish tint, which when mixed with the blue colour of the water produce the green. Near to Cape Palmas, upon the coast of Guinea, Captain Tuckey's vessel appeared to be sailing in a sea of milk; an appearance which arose also from multitudes of animals floating upon the surface, and so concealing the natural colour of the liquid. The bands of carmine red, which several navigators have noticed on the great ocean, proceed from the same cause. Sir H. Davy states, that when the tint of the Swiss lakes passes from blue to green, it is because its waters are impregnated with vegetable substances.

Near the mouths of great rivers, also, the sea has often a brownish hue, arising from the mud, and other earthy matters which are there held in suspension. The inquiry, therefore, "What is the colour of the sea?" must be kept quite clear of these accidental and local disturbances, and be confined to pure sea water.

Again:—The celestial blue tint of the sea is modified, and sometimes even totally changed in those places where the water is not very deep. The reason is, because the light reflected by the bottom reaches the eye mixed with the natural light of the water. The effect of this superposition may be calculated by the laws of optics; but we must join to our acquaintance with the nature of the two commingled tints, that, which is more difficult to ascertain,—their comparative intensities. Thus, a bottom of yellow sand reflecting but lightly, gives to the sea a green tint, because the yellow mingling with the blue produces green; now, if without changing the shades, the *dull* yellow is replaced with a *bright* yellow, the slight blue of pure water will scarcely suffice to make this a lively light green, and the sea will appear yellow. In the Bay of Loango the waters are always deep red; so much so, that they appear to be mixed with blood:—Captain Tuckey satisfied himself that the bottom is intensely red. If for this bright red bottom be substituted one of the same shade, but obscure and reflecting but slightly, the waters of the Bay would then appear orange-coloured, or even perhaps yellow.

But it may be objected to this method of regarding the subject, that a bottom of white sand ought not to alter the hue of the sea, because, if white weakens the colours with which it mingles, it does not change the tint. In answer to this, it may be asked, how can we be certain that the sand at the bottom is white? We cannot be certain of this in the open day, after having brought up a portion and exposed it to the white light of the sun, or of the clouds; because the sand may not be in the same condition when beneath the water. If in the open air it be illuminated with red, green, or blue light, it would then appear red, green, or blue. What is the colour then that falls upon it at the bottom of the water?

Water is in the condition of many other bodies which are known to possess two kinds of colours,—viz., a certain colour which is transmitted, and another colour quite different from the first, which is reflected. Water appears of a *blue* colour by *reflection;* and some imagine it to be of a *green* colour by *transmission*. Thus a portion of the white light which went to illuminate the water is dispersed by the water in all directions, after having received a *blue* tint therefrom; and it is this dispersed light which constitutes the *proper colour* of liquids. As to the other rays irregularly transmitted, their passage across the water makes them green, and intensely so in proportion as the traversed mass is thick.

Now with regard to the white sand at the bottom of a sea not very deep, this sand receives the light only through a stratum of water; the light then is green when it strikes the bottom, and it is with this tint it is reflected; and in the second passage which the luminous rays make through the same liquid in returning from the sand to the open air their green tint sometimes so predominates, that it prevails over the blue. This, perhaps, may be the whole secret, which, to the seaman, is, in *calms*, the certain and invaluable index of great depths.

But when the ocean is *agitated*, the waves suitably elevated may convey to the eye so large a quantity of *transmitted or green rays*, that the reflected blue ones shall be entirely concealed. The elevated waves of the ocean form a kind of prism; no wave is ever solitary; the continuous waves advance nearly in parallel directions. When two waves, therefore, approach a vessel, a portion of the light which the anterior face of the second wave reflects, traverses the first, is there refracted from above downwards, and thus arrives at the observer placed upon the deck. Again, then, we see transmitted light, light which is consequently made green, reach the eye at the same time with the common blue tints; but these are the phenomena of great depths over white sand produced without deep water, and the green colour of the sea arises from the predominance of the transmitted colour over the reflected colour.

Some circumstances, however, will doubtless be observed which prevent these prism waves from always producing the same effects. Some variation in the line of the sea may be expected upon a change of the wind. Upon the lakes of Switzerland, this phenomenon is apparent; it remains to be seen whether it is so upon the wide ocean.

It has long been imagined that the blue colour of the sky has had an important influence on the colour of the ocean. It must be remembered, however, that the blue rays of the atmosphere do not return from the water to the eye, till after they have been regularly reflected.

An apparently dark coloured sea (says Professor Jameson,) is a common prognostic of an approaching storm; not that the water is really blacker than usual, but because the dark colour of the clouds indistinctly seen in, or reflected from, the waves, is mistaken for the colour of the sea itself. Whatever other colour the sky happens to wear has a greater or less influence on the appearance of the ocean; thus, red clouds seem to tinge it red, &c. On some occasions the edges of the waves, by refracting the solar beams like a prism, exhibit all the brilliant colours of the rainbow, which is still more nearly imitated by the refraction of the rays in the spray. Not unfrequently an indistinct image of the neighbouring coast, reflected from the ruffled surface, is mistaken for the colour of the water.

With the intention of being freed as much as possible, from the influence of reflection, when studying the colours of the ocean, some able navigators have recommended the plan of examining it through the trunk of the ship's rudder. By this method the water exhibits in some points of view beautiful violet tints; but these hues are illusory; they are only the effect of contrast; they proceed from atmospheric light feebly reflected in an almost perpendicular direction, and coloured by their approximation to the transmitted green colours which almost invariably surround the rudder.

All attempts to investigate the colour of water must be begun when it is seen by transmission, with the aid of diffused light. Those who will recal to recollection the pre-eminently green hue of the cut edge of a crystal glass, even when this glass is only illuminated in front and perpendicularly, will perceive all the importance of this remark. The observer should be supplied with a large hollow ice prism: the refracting angle equal to 45°. This prism is to be plunged partially into water, to that the edge of its refracting angle shall be downwards and horizontal; one of the faces of this angle, viz., that which is most exposed, is to be vertical, whence it will result as a necessary consequence that the other face will be inclined to the horizon at an angle of 45°.

When the objects are thus arranged, the light which moves horizontally in the water at a fraction of an inch below the surface, that which constitutes the colour of its cutting edge, so to speak, will strike perpendicularly the vertical ice of the prism; it will penetrate into the interior of the instrument, will traverse the small quantity of air which it encloses, will reach the second plate of ice, and will there be reflected vertically from below upwards. In looking upon this inclined ice, the observer then may judge of the proper colour which the water has by refraction, quite as well as if his eye was in the liquid. In this form the experiment is simple and easy, and it is hoped that numerous observations will be made not only with sea water, but also with that of lakes and rivers.

It is desirable that the hollow prism be enclosed at its upper part by a piece of ice enclosed in glass, and having parallel faces. This will prevent the apparatus from being filled with liquid.

THE GREAT-HEADED TODY.

We have lately noticed some of those beautiful and useful little birds common to tropical countries, and known under the general name of Fly-catchers*. We shall now briefly remark on a small group of birds, sometimes confounded with the fly-catchers and fly-hunters, but really distinct from both.

These are the Todies (*Todus*), small American birds confined to the warmer portions of the new world, and holding a similar place among the feathered tribes of the west, to that which the king-fisher holds among the birds of our own land. The most universal character by which these birds may be distinguished is, their flat, elongated bill, the sides of which are bristled, though these bristles are short and weak, and in some of the species scarcely discernible. The wings and tail are short, and the form in which they terminate marks the difference between the several species. The structure of the feet is subject to much variation. There are three toes to the front, and one to the rear; the inner front toe is united to the middle one as far as the second joint, and the external as far as the third. These birds nestle on the ground near the water, after the manner of king-fishers. According to Vieillot the female makes her nest in dry earth, but prefers soft friable sandstone. She makes choice, for this purpose, of ravines and small crevices, and digs with her bill and claws, forming a rounded hole, widened at the extremity, where she places leaves, moss, and cotton, with considerable skill. The eggs are four or five in number, of a grey colour spotted with brown. The female bird sits with great constancy, and the male is assiduous in supplying her wants. Both show great attachment to their young when they appear. The male bird is said by some writers to have an agreeable song at the pairing time; but by others this is denied. In general these birds are remarkable for their silence. They are pretty birds, feeding on insects, and perfectly inoffensive. Though their wings are short, their flight is rapid and straight-forward. They perch sometimes in trees and bushes, and sometimes on stones and elevated spots of earth; but their colour is so much like that of the foliage of trees that they are seen only in the latter situations. Though not very rare, they usually dwell in wild and solitary places, which is probably the reason of their being by no means frequent in the collections of Europe.

The most commonly described species is the green tody, which is certainly the most beautiful of the group, as our account of it will presently show: but we have chosen for the subject of our illustration the great-headed tody described by Swainson, nearly in the following terms:—

The general plumage of the great-headed tody above is olive green, with a strong fawn-coloured tinge in front of the head and on the crown. This colour is separated from the back by the upper neck, being entirely of the same ash-colour as the sides, chin, and throat; but these two latter parts are striped with white; the rest of the under-plumage is yellow, tinged with olive, and striped with ash-colour on the breast and flanks. The sides of the head and base of the ear-feathers are whitish; the latter being ornamented with a broad black band; the wings and tail are brown, the feathers margined with yellowish; the tail-feathers even, but remarkably narrow, with their tips more pointed than in any of the other todies.

The most beautiful of all the todies, and of the whole of this family, as we have said, is the green tody. It is remarkable for the richness of its colouring, and Swainson remarks that its natural history, differing as it does in colour from all its congeners, must possess great peculiarities, but unfortunately we know but little of its habits and economy. It is said, that in resting it always sits with the head and bill pointing upwards, and it is thought that the bright red spot on its throat, acts, in such circumstances, as a snare to attract insects (just as a candle attracts moths), and they only discover their danger when it is too late to escape the sudden dart of the bird. This species inhabits some of the West India Islands, and is known in many of the equatorial regions of South America. The predominant colour of the upper parts of the bird is a rich parrot-green. The under plumage is more varied, the whole extent of the skin being occupied with a patch of the richest scarlet, bordered by a stripe of white, while the side feathers of the breast are of a delicate rose-colour, and the under part of the tail yellow. The total length is three inches and three-quarters. This beautiful little bird is called, by the natives of St. Domingo, the ground-parrot, or parakeet, from its habit of being almost always on the ground. It catches insects with much address, like the fly-catchers, though its habits, with regard to its nesting-place, resemble the king-fisher.

The black-headed tody is rather smaller than the green tody, especially in the head. The upper plumage is very dark ash-colour, with a few shades of olive. The head, wing-covers, and tail, are black,—all the under parts are yellow. This species inhabits Brazil and Cayenne.

Respecting the food of the todies in general, we have the assertion of Lesson, that it consists of insects which they catch in the mud or in the water. Their wide and flattened bill, he observes, furnished with bristles, permits them to sift the mud and retain their prey: they also seek for insects under the moss, and on the banks of small streams. Sloane, speaking of the green tody, says, it is one of the most beautiful birds of its size that he ever beheld. "It loves," he adds, "melancholy places, and scarce will stir from any one till they take it." Brown also speaks of it as a very familiar and beautiful bird, which will allow a person to approach within a few feet of it, and look for minutes together at it before it moves. He does not agree with some of our other authorities with respect to its retired habits, but says:—"It keeps much about houses in country parts, flies very slowly, and probably may be easily tamed."

* See *Saturday Magazine*, Vol. XXI., p. 161.

WHERE IS WISDOM TO BE FOUND?

Where the eye of Pity weeps,
And the sway of Passion sleeps,
Where the lamp of Faith is burning,
And the ray of Hope returning,
Where the "still small voice" within
Whispers not of wrath or sin,
Resting with the righteous dead—
Beaming o'er the drooping head—
Comforting the lowly mind,
Wisdom dwelleth—seek, and find!

London:—John W. Parker, Publisher, West Strand.